

M.C. Gill Composites Center Academia/Industry Partnerships

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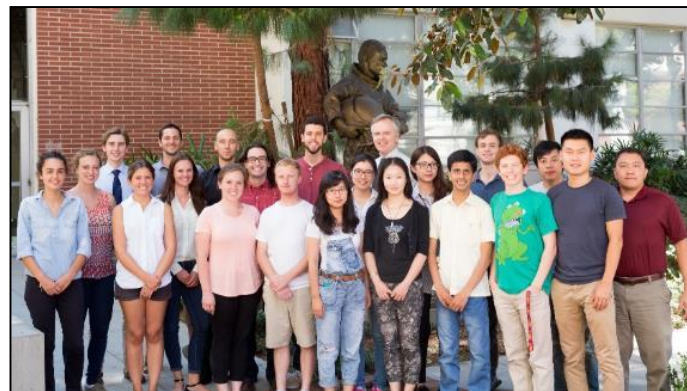
**National Aerospace Foreign
Direct Investment Exposition**

28 October 2015

M.C. Gill Composites Center



Steven R Nutt, Ph.D.
M.C. Gill Professor
Founder and Director
Co-Director, CEMMA



Select Partners

Kaneka



NORTHROP GRUMMAN



LOCKHEED MARTIN



Established in 1995
Endowed in 2002 by M.C. Gill

Extensive facilities

- composites fabrication
- materials characterization
- mechanical testing
- design and analysis
- simulations and supercomputing

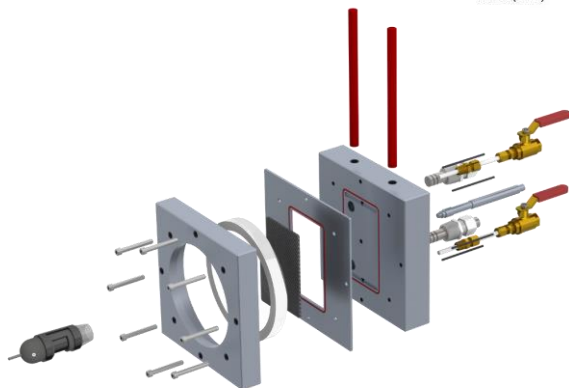
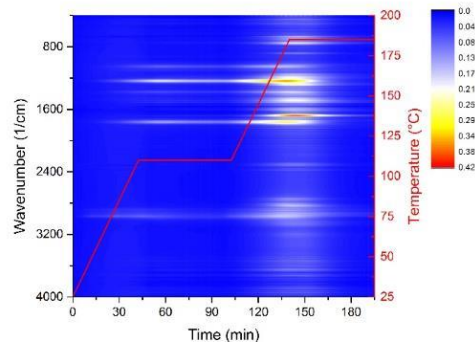
Case Study 1: USC/Henkel Collaboration



Eliminating Defects During Resin Transfer Molding of Novel Benzoxazine Resin

Sponsor: Henkel Corporation

Duration: Three years (in one-year contracts)



Objective

Understand fundamental science of defect formation, and develop viable engineering solutions for sponsors and its customers.

Benefits to USC

- Research on cutting-edge materials
- Support for PhD students
- Publications

Benefits to Sponsor

- Fundamental research
- High-quality personnel
- Access to infrastructure

Case Study 2: Airbus and the AIER

Vacuum Bag-Only Prepreg Processing

Sponsor: Airbus Institute for Engineering Research

Duration: Three year grants



Objective

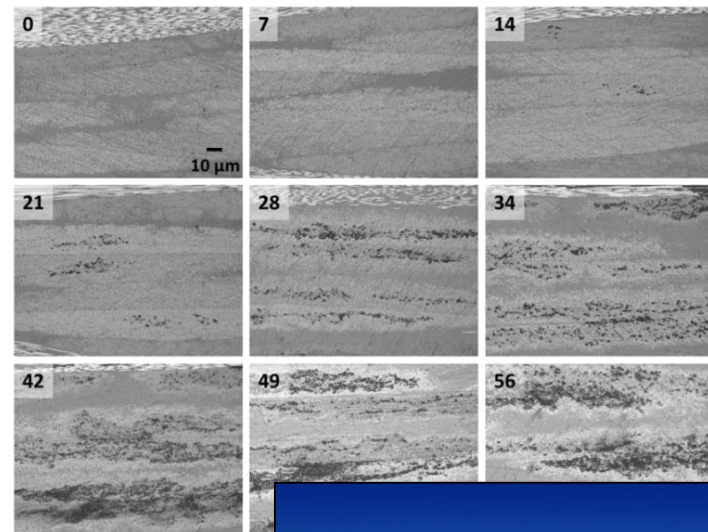
Develop effective fabrication processes for composite materials and support Airbus manufacturing R&D.

Benefits to Sponsor

- Long-term relationship with USC
- International collaborations
- Ability to direct research

Benefits to USC

- Long-term funding
- Stability for PhD students
- Industrial guidance



Case Study 3: NSF-G8 Project and IAB



Sustainable Manufacturing Using Out-of-Autoclave Prepregs

Advisors: Boeing, Northrop Grumman, Lockheed, Airbus...

Duration: Three years (based on NSF grant)



Objective

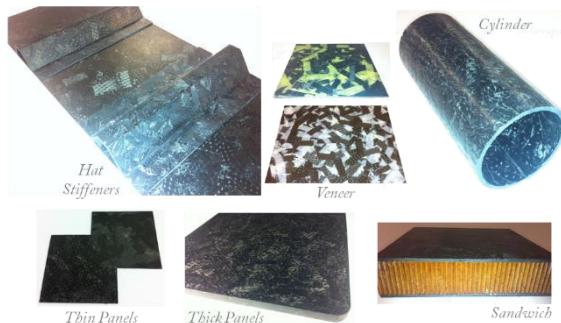
Improve manufacturing efficiency for composite materials through fundamental study and applied engineering.

Benefits to USC

- Material support
- Industrial guidance
- Follow-up funded projects

Benefits to IAB

- Fundamental research
- Access to infrastructure
- Follow-up funded projects



Key Considerations

- University-based research can **complement** the R&D carried out in traditional engineering companies.
- Several **mechanisms** are available:
 - Funded projects
 - Collaborative proposals for external funding
 - Consortia and long-term strategic partnerships
- Many perceived issues are **solvable**:
 - Intellectual property
 - Long-distance collaborations
 - Export controls
- University research can be **cost-effective**.

Contact Information



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